

Dispense head VTOE

FESTO



Key features

Description

The dispense head VTOE is available in two different variants:

- With transparent manifold duct plate made from polycarbonate (PC)
- With media-resistant manifold duct plate made from polyether ether ketone (PEEK)

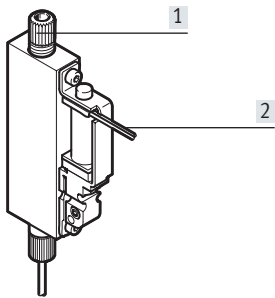
Both variants offer three different dosing syringes with three different internal diameters as standard.

Advantages:

- Ready-to-install dosing solution saves time and costs
- Compact 9 mm grid dimension
- Maximum dosing precision down to the microlitre range
- Ideally suited to non-contact dispensing and jetting of liquid media

- Dosing valve isolated from the media, for sensitive and aggressive liquid media
- Small internal volume makes it easy to rinse

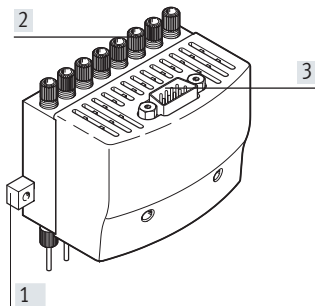
VTOE-...-S design



- [1] Fluid connection
[2] Individual electrical connection

Single-channel dispense head:
Enables dosing with the utmost precision.

VTOE-8-...-M design



- [1] Mounting strip
[2] Fluid connections
[3] Electrical multi-pin plug connection

8-channel dispense head:
The system is optimally designed for microwell plates and enables a very high throughput as well as dosing of various fill quantities and liquid media.

Individual control of the valves permits the ducts to be coordinated for maximum precision.

Range of application

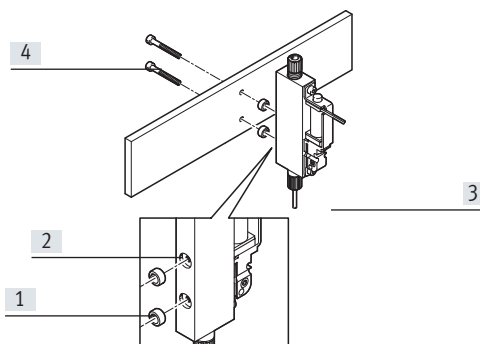
The dispense head VTOE is intended for installation in laboratory devices. It is designed to dispense liquids within the scope of its technical data.

The chemical resistance of the dispense head materials coming into contact with the media must be checked for each application. It is necessary to verify the extent to which the dispense head VTOE is suitable for the intended application.

The dispense head is not suitable for aspiration of liquids. It is not approved for direct contact with foodstuffs or their ingredients.

If you are unsure about the product's suitability for the planned application, please contact Festo for advice.

Mounting

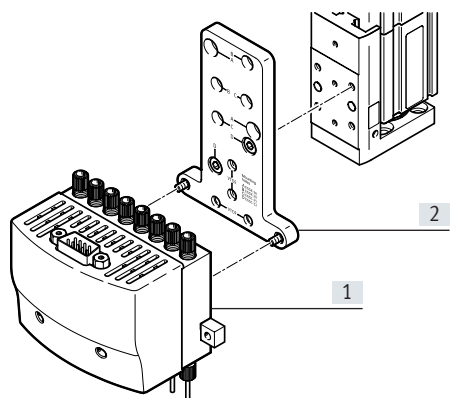


- [1] Centring rings
[2] Drilled holes
[3] Dispense head
[4] Screws

Position the centring rings in the drilled holes and mount the dispense head on the strip using the screws. Up to eight dispense heads can be mounted on one rail, with a grid dimension of 9 mm.

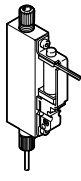
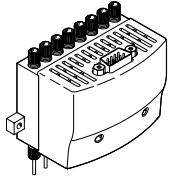
Key features

Mounting on a drive with adapter plate



- [1] Dispense head VTOE
- [2] Adapter plate

Product range overview



Function	Description	Nominal width Dosing needle [mm]	Operating pressure [MPa]	Operating voltage
Single-channel dispense head	 <p>2/2-way valve, normally closed, single solenoid Electrical connection, cable, open end</p>	0.32	0 ... 0.05	24 V DC
		0.6	0 ... 0.05	24 V DC
		1.0	0 ... 0.05	24 V DC
8-channel dispense head	 <p>8x 2/2-way valves, normally closed, single solenoid Electrical connection, Sub-D, 9-pin</p>	0.32	0 ... 0.05	24 V DC
		0.6	0 ... 0.05	24 V DC
		1.0	0 ... 0.05	24 V DC

Type codes

001	Series		
VTOE	Dispense head		
002	Valve positions		
	1 valve position		
8	8 valve positions		
003	Output connection		
D9	Nozzle, length 30 mm, nominal size 1.0 mm		
D7	Nozzle, length 30 mm, nominal size 0.32 mm		
D8	Nozzle, length 30 mm, nominal size 0.6 mm		
004	Input connection		
T3	For tubing 3 mm		
005	Valve function		
M22C	2/2-way valve, normally closed		
006	Nominal width		
08	0.8 mm		
007	Diaphragm and sealing material		
F	FFPM		
V	FPM		
008	Housing material		
P	PEEK		
S	PPS		
009	Manifold block material		
P	PEEK		
PC	Polycarbonate		
010	Valve control		
M	Multi-pin electric		
S	Individual connection, electric, with flying leads, 0.2 m		

Dispense head VTOE

Data sheet

-  Voltage
24 V DC
-  Operating pressure
0 ... 0.05 MPa



General technical data				VTOE-D...-S	VTOE-8-D...-M
Type					
Valve function				2/2-way valve, closed, single solenoid	
Reset method				Mechanical spring	
Application information				See application note (available on the Support Portal at festo.com)	
Nominal width		[mm]	0.8		
Nominal width of dosing needle	VTOE...-D7	[mm]	0.32	0.32	
	VTOE...-D8	[mm]	0.6	0.6	
	VTOE...-D9	[mm]	1	1	
Length of dosing needle		[mm]	30		
Internal volume		[µl]	113		
				Valve with fluid connections	
Water flow rate at maximum operating pressure	VTOE...-D7	[µl/s]	370	370	
	VTOE...-D8	[µl/s]	1300	1300	
	VTOE...-D9	[µl/s]	2000	2000	
Minimum dispensing volume	VTOE...-D7	[µl]	1	1	
	VTOE...-D8	[µl]	3	3	
	VTOE...-D9	[µl]	5	5	
Note on dosing volume				Depends on configuration, environment and application	
Typical dosing precision	For volumes 1 ... 5 µl	[%]	±2.5 CV		
	For volumes over 5 µl	[%]	±1 CV		
Note on dosing precision				Depends on configuration, environment and application	
Max. switching frequency		[Hz]	4		
Note on switching frequency				Dependent on the ambient temperature and installation state	
Switching time	On	[ms]	7		
	Off	[ms]	2		
Note on switching time				Depends on configuration, environment and application	
Mounting position				Any	
Grid dimension		[mm]	9		
Actuation type				Electrical	
Type of control				Direct	
Sealing principle				Soft	
Fluid connection				UNF1/4-28	8x UNF1/4-28
Note on fluid connection				Fitting for tubing with 3 mm outside diameter enclosed	
Type of mounting				Via female thread M2 and centring sleeve	Via female thread and centring sleeve
				-	Via through-hole for M3 screw
Product weight		[g]	18	220	

Data sheet

Electrical connection		
Type	VTOE-D...-S	VTOE-8-D...-M
Connection technology	Cable, open end, 2-wire	Sub-D plug, 9-pin
Cable length [m]	0.15	–
Wire ends	Stripped	–
Nominal conductor cross section	AWG28	–

Electrical data		
Type	VTOE-D...-S	VTOE-8-D...-M
Nominal operating voltage [V DC]	24	
Permissible voltage fluctuations [%]	±10	
Electrical power consumption [W]	1.8	
Note on power consumption	–	Specification per valve
Duty cycle [%]	100 with individual mounting 50 in case of block mounting (max. switch-on time 1 s)	50 (max. switch-on time 1 s)
Degree of protection	IP30	
Note on degree of protection	In assembled state	
Pollution degree	2	

Operating and environmental conditions		
Operating pressure	[MPa]	0 ... 0.05
	[bar]	0 ... 0.5
	[psi]	0 ... 7.25
Medium		Liquid media
Note on the medium		Observe resistance of materials in contact with the medium
Ambient temperature [°C]		5 ... 40
Temperature of medium [°C]		5 ... 50
Storage temperature [°C]		–20 ... 70
Relative humidity [%]		0 ... 95
Relative humidity		Non-condensing
Nominal altitude of use		≤ 2000 m above sea level
Vibration resistance		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Corrosion resistance class CRC		0 ¹⁾
CE marking ²⁾		To EU RoHS Directive

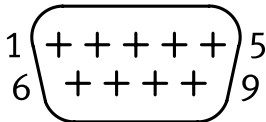
1) Corrosion resistance class CRC 0 to Festo standard FN 940070

No corrosion stress. Applies to small, visually unimportant standards-based parts such as threaded pins, circlips and clamping sleeves which are usually only available on the market in a phosphated or burnished version (and possibly oiled) as well as to ball bearings (for components < CRC 3) and plain bearings.

2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... → Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Materials		
Dosing needle		High-alloy stainless steel
Material number for dosing needle		1.4301
Note on materials		RoHS-compliant
		Contains paint-wetting impairment substances
Materials in contact with the media	VTOE...-V-S-PC	ETFE, PEEK, PC, PPS, FPM, high-alloy stainless steel
	VTOE...-F-P-P	ETFE, PEEK, FFPM, high-alloy stainless steel

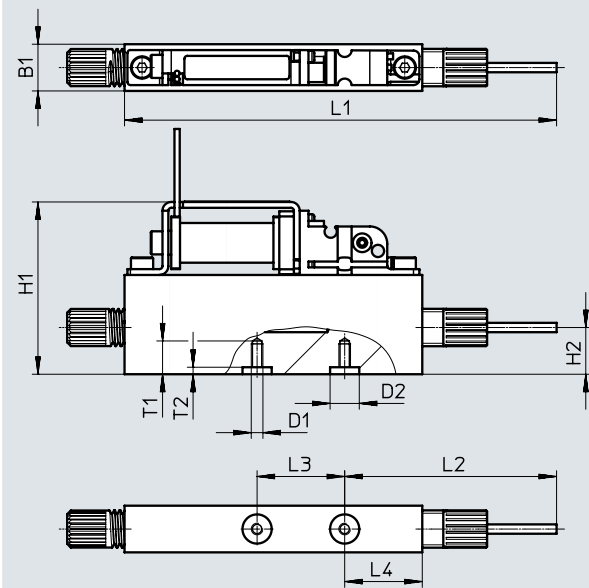
Pin allocation		
	Pin	Function
	1	Valve 1
	2	Valve 2
	3	Valve 3
	4	Valve 4
	5	Valve 5
	6	Valve 6
	7	Valve 7
	8	Valve 8
	9	GND

Data sheet

Dimensions

Download CAD data → www.festo.com

VTOE...S



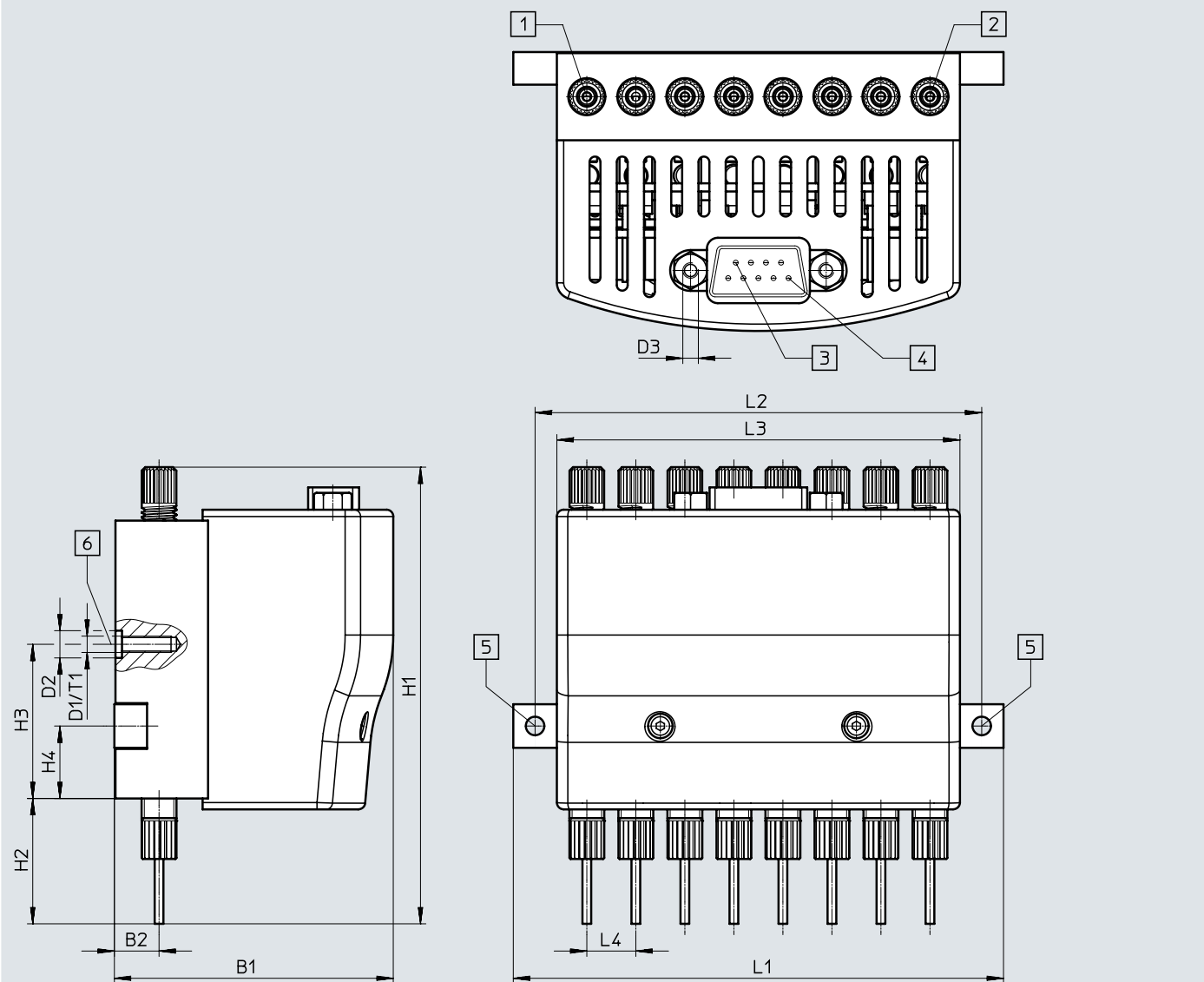
Type	B1	D1	D2 ∅	H1	H2	L1	L2	L3	L4	T1	T2
VTOE...S	8.1	M2	5	30	8	74	36.3	15	13.3	5.2	1.2

Data sheet

Dimensions

Download CAD data → www.festo.com

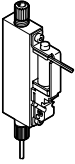
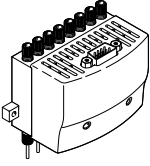
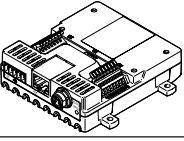
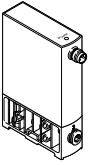
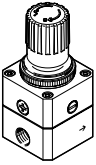
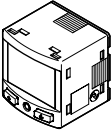
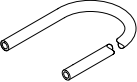
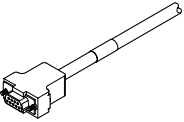
VTOE-8-...-M



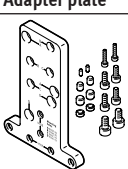
- [1] Duct 1
- [2] Duct 8
- [3] Pin 9
- [4] Pin 1
- [5] Drilled hole for M3 screw
- [6] Optional: mounting without mounting strip – thread M3x min. 9

Type	B1	B2	D1 ∅	D2 ∅	D3 ∅	H1 ±2	H2	H3	H4	L1	L2	L3	L4	T1
VTOE-8-...-M	51.2	8.2	M3	5	UNC 4-40	84	23	28.3	13.3	90	82	74	9	10.2

Accessories

Ordering data		Description	Nominal width of dosing needle [mm]	Part no.	Type
Dispense head, individual connection					
	2/2-way valve, normally closed	0.32	8063372	VTOE-D7-T3-M22C-08-F-P-P-S	
			8063369	VTOE-D7-T3-M22C-08-V-S-PC-S	
		0.6	8063373	VTOE-D8-T3-M22C-08-F-P-P-S	
			8063370	VTOE-D8-T3-M22C-08-V-S-PC-S	
			8063374	VTOE-D9-T3-M22C-08-F-P-P-S	
8063371	VTOE-D9-T3-M22C-08-V-S-PC-S				
Dispense head, 8-channel					
	8x 2/2-way valve, normally closed	0.32	8063637	VTOE-8-D7-T3-M22C-08-F-P-P-M	
			8063634	VTOE-8-D7-T3-M22C-08-V-S-PC-M	
		0.6	8063638	VTOE-8-D8-T3-M22C-08-F-P-P-M	
			8063635	VTOE-8-D8-T3-M22C-08-V-S-PC-M	
			8063639	VTOE-8-D9-T3-M22C-08-F-P-P-M	
8063636	VTOE-8-D9-T3-M22C-08-V-S-PC-M				
Ordering data			Pressure regulation range [bar]	Part no.	Type
Valve control module					
	For up to 8 solenoid valves		8088772	VAEM-V-S8EPRS2	
Proportional pressure regulator					
	Current type, 4 ... 20 mA	0.005 ... 1	8046304	VEAB-L-26-D7-Q4-A4-1R1	
		0.001 ... 0.2	8046302	VEAB-L-26-D12-Q4-A4-1R1	
	Voltage type, 0 ... 10 V	0.005 ... 1	8046303	VEAB-L-26-D7-Q4-V1-1R1	
		0.001 ... 0.2	8046301	VEAB-L-26-D12-Q4-V1-1R1	
Precision pressure regulator					
	For regulating the operating pressure	0.05 ... 0.7	159500	LRP-1/4-0.7	
Pressure sensor					
	For monitoring compressed air and non-corrosive gases		8035542	SPAN-B2R-Q4-PNLK-PNVBA-L1	
Plastic tubing					
	Tubing O.D. 3 mm Packaging unit 50 m		197375	PUN-H-3X0.5-NT	
Connecting cable					
	Sub-D socket, 9-pin	5 m	531185	KMP6-09P-8-5	
		10 m	531186	KMP6-09P-8-10	

Accessories

Ordering data		Part no.	Type
Adapter plate			
	To mount the dispense head VTOE on the electric slide EGSC-32	81140774	EHAM-MA-E19-25-C11

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